



SUMMARY OF IGCP 2017

IN EARTH RESOURCES THEME

FEBRUARY 2018

IGCP 637 Heritage Stone Designation

Duration: 5 years (2015-2019)

Aims: The scientific objectives of the project are protecting global heritage stone sites by certification, increasing professional and social awareness of the natural stone and cultural heritage to enhance international cooperation for the research and documentation on the global natural stone sites.

Related UN SDGs: The project contributes to Goal 4: Ensure inclusive and quality education for all and promote lifelong learning, as one of the specific project objectives are to support young scientists and students from developing countries.

Countries involved, approximate number of total 2017 participants: Twenty-nine countries and 30 participants are actively involved in the project this year: four developing and 25 developed countries (Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Czech Republic, Egypt, Finland, France, Germany, Greece, India, Ireland, Italy, Malawi, Malta, Morocco, Norway, Portugal, Russia, Saudi Arabia, Slovenia, Spain, Sweden, UK, USA, Uruguay). 37% are female scientists, 63% male scientists and 22% are young scientists under 35 years old.

Scientific activities (meetings, workshops, training sessions): a very successful and well attended annual project meeting was organized within the EGU 2017, Vienna. 26 contributions were presented by authors representing 15 countries. The meeting favored the recruiting of collaborators from various countries including Slovenia, Malawi, Saudi Arabia, Italy, Portugal, Australia, Spain, India, France, Germany, Brazil, Norway, UK and Morocco.

Scientific achievements/ results (papers, new findings, new models, new data, new maps etc.): one of the major scientific achievements of 2017 is approval of 6 GHSR (Global Heritage Stone Resource) proposals, which include Portland Stone in UK, Larvikite in Norway, Petit Granite in Belgium), Podpec Limestone in Slovenia, Hallandia Gneiss in Sweden and Carrara Marble in Italy. The project also generated five publications in Geoheritage and Episodes, mostly related to approaches for outreach and public awareness of heritage stones

Societal/educational results/highlights (media coverage, science education, cultural activities): The present project leader has been interviewed about heritage stones by local newspapers and academic media aiming at a wider promotion of the topic. A video has been recorded at the university of Salamanca with information about the IGCP-637.

IGCP 636 Characterization and sustainable exploitation of geothermal resources [in the zona cafeteria of Colombia]

Duration: 3 years (2016-2018)

Aims: The general objective is to investigate innovative field methodologies and modeling techniques to facilitate the decision process tying to the management of geothermal resources as well as evaluating public awareness and acceptance, which can further impact the management of these resources. This innovative approach highly supports development of new models for geothermal systems. The project established a wide cooperation between universities and research institutions from four continents and this provides a unique opportunity to complete comparative studies with comparable approach on different types of geothermal systems.

Related UN SDGs: The project contributes to Goal 4: Ensure inclusive and quality education for all and promote lifelong learning, as one of the specific project objectives are to support young scientists and students from developing countries; for that reason 75% of the scientists involved are under 35 years old. The project also contributes to Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all and Goal 13: Take urgent action to combat climate change and its impacts as one of the project objectives are to develop new and more effective methods to exploit geothermal resources, which, unlike fossil fuels, do not involve any form of combustion. This means geothermal [power plants] give off significantly few amounts of greenhouse gasses and thereby help offset global warming.

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Countries involved, approximate number of total 2017 participants: Fifty-one participants from nine countries (Colombia, Chile, France, Belgium, Canada, Iceland, Sweden, Madagascar, Italy) actively participated last year. 37 % of scientists are women, 63% is male; 75% is under 35 years old.

Scientific activities (meetings, workshops, training sessions):

Many IGCP project meetings (8) were organized and attended (Colombia, Iceland, Sweden). The project was also represented on 6 international meetings with participation of many students and young scientists. Several graduate (5 Msc, 6 PhD) and undergraduate (13) students have been recruited to work on project-related subjects (can be seen as training).

Scientific achievements/ results (papers, new findings, new models, new data, new maps etc.): Some of the most important scientific-related achievements are related to estimation of the geothermal potential and numerical modelling of the Nevado del Ruiz geothermal field in Colombia; the collection of new analytical data and start of heat transfer modeling for new geothermal fields in Chile/France. In 2017, the project published 5 papers in peer-reviewed journals (6 were submitted – to GRC Transactions, Journal of Geochemical Exploration, Canadian Journal of Earth Sciences, Environmental Earth Sciences, Journal of South American Earth Sciences), and 8 short papers were published in proceeding volumes of international conferences.

Societal/educational results/highlights (media coverage, science education, cultural activities): Public outreach included two surveys, an international one to increase awareness of renewable energy sources and its sustainable exploitation (Restrepo et al., 2017) and another to analyze the perception of the rural community living around a potential geothermal power plant (VNR, Colombia).

IGCP 638 Geology and Societal Impact of the Gold Mineralizations in the Birimian Terrains (West African Craton)

Duration: 5 years (2016-2020)

Aims: This project aims to improve knowledge of the relationship between (gold-) bearing mineralizations and the geodynamic evolution of the old Birimian formations (2300-2000 million years ago) in the West African Craton, so better targeted prospecting and exploitation can take place. A second aim is to determine the types of pollutants used in 'gold washing' and their impact on public health by carrying out a hydrogeochemical study.

Related UN SDGs: This project contributes to Goal 6: Ensure access to water and sanitation for all as it tries to evaluate the effects of the traditional exploitation of gold on water quality and the availability of the water resources to manage public health risks. The project also contributes to Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all and Goal 12: Ensure sustainable consumption and production patterns as it tries to find new gold discoveries in West Africa and exploit them sustainably, creating jobs in the mining sector and thereby contributing to the economic and social development of the states.

Countries involved, approximate number of total 2017 participants: Sixteen countries and 145 participants are actively involved in the project this year: 13 African countries (Algeria, Burkina Faso, Côte d'Ivoire, Cameroon, Gabon, Ghana, Guinea, Morocco, Mali, Mauritania, Niger, Senegal) and three developed countries (Korea, Belgium, France). 32% is female scientist, 68% is male scientist participant and 62% are young scientists under 35 years old.

Scientific activities (meetings, workshops, training sessions): the project organized an annual meeting in Casablanca, Morocco in 2017 (145 participants from 14 countries) as well as a four-day field trip to the South Moroccan Atlas Belt. A field trip guide book was also realized.

Scientific achievements/ results (papers, new findings, new models, new data, new maps etc.): the main scientific achievement is the establishment of a new collaboration programme with South America (Uruguay, Argentina and Brazil) to compare and correlate Paleoproterozoic mineralizations from the West African craton with the Rio de la Plata Craton, as well as reaching out to other research programs focusing on the western African areas (AMIRA/WAXI). Five articles were published in international peer-reviewed journals and one more is in review.

Societal/educational results/highlights (media coverage, science education, cultural activities): Public outreach of the health dangers related to the use of mercury and cyanide in gold washing was done through the online press, websites of different institutes, universities Associations and NGOs, as well as an item on the national TV channel.